PEBBLE CREEK BRIDGE
Yellowstone Roads and Bridges
Spanning Pebble Creek on
Northeast Entrance Road
Yellowstone National Park
Park County
Wyoming

HAER No. WY-40

BLACK & WHITE PHOTOGRAPHS

WRITTEN HISTORICAL & DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
U.S. Department of the Interior
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Washington, DC 20013-7127

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HISTORIC AMERICAN ENGINEERING RECORD

PEBBLE CREEK BRIDGE

~~HAER WY-40~~

Location:	Spanning Pebble Creek on Northeast Entrance Road, 9.1 miles west of the northeast entrance station, Yellowstone National Park, Park County, Wyoming UTM: Abiathar Peak, WY, Quad. 12/570175/4973700
Date of Construction:	1936
Owner:	Yellowstone National Park, National Park Service
Use:	Vehicular bridge
Designer:	Architectural plans by W.G. Carnes, Branch of Plans and Design, National Park Service General plans and specifications by V.C.H., Bureau of Public Roads L.U. Foreman, Project Engineer, Bureau of Public Roads
Builder:	Strong & Grant, Springville, Utah
Significance:	Pebble Creek Bridge typifies the early design philosophy of the National Park Service, which was to use indigenous materials to harmonize man-made features with their natural surroundings. This philosophy is embodied in many of the park's Rustic Style buildings and structures.
Project Information:	Documentation of Pebble Creek Bridge is part of the Yellowstone Roads and Bridges Recording Project, conducted during the summer of 1989 by the Historic American Engineering Record, a division of the National Park Service, under the co-sponsorship of Yellowstone National Park, the NPS Roads and Bridges Program, and the NPS Rocky Mountain Regional Office, Denver. Historical research and written narrative by Mary Shivers Culpin, Historian, NPS Rocky Mountain Regional Office. Engineering description by Steven M. Varner, Virginia Polytechnic Institute. Edited and transmitted by Lola Bennett, HAER Historian, 1993.

HISTORY OF NORTHEAST ENTRANCE ROAD

(See HAER WY-12, Lamar River Bridge.)

DESIGN AND CONSTRUCTION OF PEBBLE CREEK BRIDGE

Construction of Pebble Creek Bridge was part of a 13.058-mile modernization project of the old Tower Junction to Cooke City road. The former wagon road did not meet the demands of the increasing volume of tourists who were entering the park on the recently completed Cooke City to Red Lodge, Montana, road (Beartooth Highway). The major focus of the project was grading and the construction of three bridges, one of which was Pebble Creek Bridge, 9. 1 miles west of the park boundary at Cooke City.

During the autumn of 1933, A.O. Stinson of the Bureau of Public Roads completed the location survey in which test pits were excavated to determine the nature of foundation material and samples of the sand and gravel were gathered from several nearby stream deposits.

Plans were drawn up during the spring of 1934, based upon a 24-foot clear roadway, curb-to-curb. Strong & Grant of Springville, Utah, was awarded the contract on September 29, 1934. Due to awarding the contract so late in the construction season, no work was started in 1934. Toward the end of May 1936, the contractor established a temporary camp, and the six-man crew began work on June 1. The first task was to erect a screening and washing plant for the production of concrete aggregate from a large gravel bar near the confluence of Soda Butte Creek and Pebble Creek.

Due to the concurrent construction of three bridges along the project, the bridges were built in stages, in order to utilize common equipment and labor on each structure. The staggered construction and lack of adequate manpower resulted in the approaches to the three bridges not being finished as soon as the concrete was ready for backfilling. With only a few days needed for finishing the approaches, the project had to be shut down for the winter. Work did not begin again until June 8, 1936.

Crews arrived on June 8, 1936, to complete the approaches, only to find that they had settled noticeably. Upon the obliteration of the camp site, the final inspection was completed on July 27, 1936, by C.F. Capes of the Bureau of Public Roads. The bridge cost a total of $17,487.10. The entire project took a total of 172 days, or 86 percent, of the contract's allowable 200 days. The labor for the work was secured through the office of the National Reemployment Service located at Mammoth Hot Springs. Most of the men came from Montana, Wyoming and Idaho. Available unskilled labor was ample, but finding skilled laborers (particularly bridge carpenters) was more difficult.[1]

The point where the bridge crosses Pebble Creek is in a wide, nearly flat valley near the creek's mouth. Like Soda Butte Creek, Pebble Creek is subject to sudden rises, in addition to having a shallow, poorly defined, and completely inadequate channel at the bridge site. In order to compensate for these disadvantages and provide some protection, a major part of the material for the approaches were scooped from the main channel while several overflow channels were filled.

DESCRIPTION

Pebble Creek Bridge is a continuous three-span concrete deck girder with concrete piers and abutments. The maximum span length of 36' is measured form center of support to center of support. The flanking spans are 20' long. The structure length from end of wing wall to end of wing wall is 122'. The deck width is 27.1' while the bridge roadway from curb to curb is 24.2'

wide. The continuous slab, reinforced concrete superstructure had a substructure of reinforced concrete gravity type piers and "U"-type abutments.[2]

The design load was 15 tons. The two concrete girders form a half-arch of 104 foot radius on the flanking spans and an arch of the same radius on the center span. The girders are 2'-7½" deep and 1'-6" wide. The top of the girders form a curb 9" high. The flat slab is approximately 1'-6" thick.[3]

The guard rail of this bridge consist of 10"-diameter posts, 8' on center. The posts rise 2'-1" above the curb and are sunk into 8"-diameter posts sunk into the curb and girder. The rail is on the roadway side and is 8" in diameter. It is connected to the posts with a ¾-inch galvanized iron bolt countersunk on the roadway side. The top of the rail is 4" below the top of the posts.[4]

The abutments batter 1:12 on the transverse side and ½:12 on the longitudinal side. The wing walls are 24' long. The abutment has a 2-foot seat to receive the girders. The foundation material under the bridge is coarse gravel and boulders with good supporting power. The piers batter ¾:12 on all faces and are 4' wide. They rise about 8' from the ground to the girders.[5]

In 1986 the general condition of the bridge was listed as poor with moderate to severe spalling of the weather exposed surfaces.[6]

ENDNOTES

1.L.U. Foreman, "Final Construction Report (1935-1936) on Project NR 8-A1, Bridges, Tower Junction-Cooke City Highway, Yellowstone National Park," 26 March 1937.

2."Bridge Inspection Report, Pebble Creek Bridge, Yellowstone National Park," U.S. Department of Transportation, Federal Highway Administration, Western Direct Federal Division, 10 August 1986.

3.Architectural Plans for Pebble Creek Bridge, Yellowstone National Park, 15 May 1934, Branch of Plans and Design, National Park Service.

4.Ibid.

5.Ibid.

6."Parkwide Road Engineering Study, Yellowstone National Park," vol. I, U.S. Department of Transportation, Federal Highway Administration, Western District Federal Division, Vancouver, Washington, 1986.